

Chapter 7 • Coordinate Geometry

Part 8 • Number Search & Magic Square

Work out each answer below, then find it hidden in the digit grid — across, down, diagonally or backwards.

- 1. x-coordinate of the relay tower P (Section 7.2)
- 2. y-coordinate of the relay tower P
- 3. Distance in km town B is east of town A
- 4. Distance in km town B is north of town A
- 5. x-coordinate of the point dividing (4,−3),(8,5) in ratio 3:1 (Example 6)
- 6. AB^2 for the square in Example 2
- 7. y-coordinate of the point equidistant from (6,5) and (−4,3) (Example 5)
- 8. Size of the x-coordinate of trisection point Q in Example 8

0	1	6	1	8	4	5	6	9	9	5	9	0
8	9	3	8	6	1	0	0	8	5	1	9	3
0	5	5	8	2	0	0	3	4	3	8	4	9
0	4	4	3	7	2	3	4	9	0	7	7	1
8	0	4	3	1	7	2	4	5	5	0	1	2
1	9	2	8	3	8	4	3	7	0	9	2	8
4	2	3	1	2	6	9	8	8	0	5	9	4
5	1	4	9	0	3	2	6	7	7	5	1	3
1	2	1	4	0	3	3	7	9	7	5	8	4
9	1	0	8	3	4	0	4	9	8	0	4	9
7	3	5	9	5	3	5	1	5	7	6	3	1
7	9	9	8	2	9	1	4	5	0	7	2	0
5	5	7	9	9	1	7	2	2	5	3	2	2

☐ 12	☐ 36	☐ 15	☐ 34	☐ 5
☐ 7	☐ 9	☐ 4		

Magic Square — every row, column and diagonal adds to the same total.

A 3×3 grid using the consecutive integers 1-9, one per box, every row, column and diagonal summing to the same magic constant.

8		6
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3	5	
	9	

Magic constant: 15. Fill the empty cells.

□ Concept Bingo

Fill the empty grid below with any 16 terms from the bank — in any order, one per box. Then work down the clue list: each clue describes one term without naming it. Cross off a box only when you are sure which term its clue is describing. Get four crossed in a row, column or diagonal and you have bingo.

Term bank — choose any 16:

Distance formula	Section formula	Mid-point formula	Abscissa
Ordinate	Collinear points	Origin	Coordinate axes
Trisection points	Quadrant	Right triangle	Isosceles triangle
Square	Rhombus	Parallelogram	Perpendicular bisector
Internal division	Pythagoras theorem		

Your bingo card:

Clue list — read each clue and find the term it describes:

- ① The formula that gives the length of the segment joining two points.
- ② The formula that gives the coordinates of a point dividing a segment in a given ratio.
- ③ The special case of the section formula where the ratio is 1 : 1.
- ④ The x-coordinate of a point.
- ⑤ The y-coordinate of a point.
- ⑥ Points that all lie on one straight line.
- ⑦ The fixed point (0, 0) from which coordinates are measured.
- ⑧ The pair of perpendicular lines used to locate points on a plane.
- ⑨ The two points that split a line segment into three equal parts.
- ⑩ One of the four regions the coordinate axes divide the plane into.

- A triangle with one angle equal to 90° .
- A triangle with (at least) two equal sides.
- A quadrilateral with all sides equal and all diagonals equal.
- A quadrilateral with all sides equal, but diagonals not necessarily equal.
- A quadrilateral whose diagonals bisect each other.
- The line through the mid-point of a segment, at right angles to it — every point on it is equidistant from the two ends.
- Dividing a segment so the dividing point lies between the two given points (as opposed to outside them).
- The theorem $a^2 + b^2 = c^2$ that the distance formula is built from.

Two questions — how far, and what point lies between — turn out to answer almost every "what shape is this?" question coordinate geometry can ask. Distance and section: that is the whole chapter. □□